

## **ABSTRACT**

Methods and apparatus are provided for communicating an audio stream. A perceptual mask is estimated for an audio stream, based on the perceptual threshold of the human auditory system. A hidden sub-channel is dynamically allocated substantially below the estimated perceptual mask based on the characteristics of the audio stream, in which additional payload is transmitted. The additional payload can be related to components of the audio stream that would not otherwise be transmitted in a narrowband signal, or to concurrent services that can be accessed while the audio stream is being transmitted. A suitable receiver can recover the additional payload, whereas the audio stream will be virtually unaffected from a human auditory standpoint when received by a traditional receiver. A coding scheme is also provided in which a portion of a codec is used to code an upper-band portion of an audio stream, while the narrowband portion is left uncoded.